

Patent Claims

1. Rear-projection screen which has at least one scattering layer encompassing scattering particles and has at least one backing layer, characterized in that the halved-intensity angle of the scattering layer is greater than or equal to  $15^\circ$  and the halved-intensity angle of the backing layer is smaller than or equal to  $6.5^\circ$ , where the gloss  $R_{60^\circ}$  of the backing layer is smaller than or equal to 70.  
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2. Rear-projection screen according to Claim 1, characterized in that the median diameter of the scattering particles is in the range from 0.1 to 40  $\mu\text{m}$ .  
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3. Rear-projection screen according to Claim 2 or 3, characterized in that the scattering particles encompass plastic.  
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4. Rear-projection screen according to one of the preceding claims, characterized in that the average surface roughness  $R_z$  of the surface of the backing layer is in the range from 3 to 40  $\mu\text{m}$ .  
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5. Rear-projection screen according to one of the preceding claims, characterized in that the gloss  $R_{85^\circ}$  of the scattering layer is smaller than or equal to 60.  
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6. Rear-projection screen according to one of the preceding claims, characterized in that the backing layer has a multilayer structure.  
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7. Rear-projection screen according to one of the preceding claims, characterized in that the gloss of the backing layer is achieved via application of a film.

- 5 8. Rear-projection screen according to one of the preceding claims, characterized in that the halved-intensity angle of the backing layer is smaller than or equal to  $3^\circ$ .
- 10 9. Rear-projection screen according to one of the preceding claims, characterized in that the thickness of the backing layer is in the range from 1 to 10 mm.
- 15 10. Rear-projection screen according to one of the preceding claims, characterized in that the thickness of the scattering layer is in the range from 0.1 to 1 mm.
- 20 11. Rear-projection screen according to one of the preceding claims, characterized in that the quotient calculated by dividing the thickness of the backing layer by the thickness of the scattering layer is in the range from 1:1 to 50:1.
- 25 12. Rear-projection screen according to one of the preceding claims, characterized in that the average surface roughness  $R_z$  of the scattering layer is in the range from 4 to 50  $\mu\text{m}$ .
- 30 13. Rear-projection screen according to one of the preceding claims, characterized in that the scattering layer encompasses at least two particles (A) and (B), which differ in size.
- 35 14. Rear-projection screen according to Claim 14, characterized in that the median diameter of the particles (A) is in the range from 0.1 to 40  $\mu\text{m}$  and their refractive index differs from that of the plastics matrix by from 0.02 to 0.2, while the median diameter of the particles (B) is in the range from 10 to 150  $\mu\text{m}$  and their refractive index

differs from that of the polymethyl methacrylate matrix by from 0 to 0.2.

- 5 15. Rear-projection screen according to one of the preceding claims, characterized in that the scattering layer and/or the backing layer has been coloured.
- 10 16. Rear-projection screen according to one of the preceding claims, characterized in that the transmittance of the rear-projection screen is at least 25%.
- 15 17. Rear-projection screen according to one of the preceding claims, characterized in that the scattering layer and the backing layer are composed of coextruded polymethyl methacrylate with a path difference of at most 25 nm due to optical birefringence.
- 20 18. Moulding according to one of the preceding claims, characterized in that the D65/10° yellowness index of the moulding to DIN 6167 is smaller than or equal to 12.
- 25 19. Moulding according to one of the preceding claims, characterized in that the weathering resistance of the moulding to DIN 53 387 is at least 5000 hours.
- 30 20. Process for producing a rear-projection screen according to one or more of Claims 1 to 17, characterized in that a moulding composition which encompasses scattering particles is extruded to give a layer, and this layer is then bonded to a  
35 backing layer.
21. Process for producing a rear-projection screen according to one or more of Claims 1 to 17, characterized in that a moulding composition

encompassing scattering particles is coextruded with a moulding composition which encompasses no, or only a very small amount of, scattering particles.

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22. Process according to Claim 20 or 21, characterized in that use is made of an embossing roll for producing the backing layer.

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23. Process for producing a rear-projection screen according to Claim 17, characterized in that the polymethyl methacrylate is extruded to give a sheet or film, and the extruded sheet or film is then heated to 110-190°C for from 5 minutes to

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24 hours.

24. Use of a rear-projection screen according to Claim 17 for 3D projection.